Fig. 6A

C.anc.env (subtype C ancestral env. The amino acid sequence is different from Los Alamos Database August 2002)

GCCGCCATGCGCGTGATGGGCATCCTGCGCAACTGCCAGCAGTGGTGGAT
CTGGGGCATCCTGGGCTTCTGGATGCTGATGATCTGCTCCGTGGTGGGCA
ACCTGTGGGTGACCGTGTACTACGGCGTGCCCGTGTGGAAGGAGGCCAAG
ACCACCCTGTTCTGCGCCTCCGACGCCAAGGCCTACGAGCGCGAGGTGCA
CAACGTGTGGGCCACCCACGCCTGCGTGCCCACCGACCCCAACCCCCAGG
AGATGGTGCTGGAGAACGTGACCGAGAACTTCAACATGTGGAAGAACGAC
ATGGTGGACCAGATGCACGAGGACATCATCTCCCTGTGGGACCAGTCCCT
GAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAACTGCACCA
ACGTGACCAACGCCACCAACAACACCTACAACGGCGAGATGAAGAACTGC
TCCTTCAACATCACCACCGAGCTGCGCGACAAGAAGAAGAAGGAGTACGC
CCTGTTCTACCGCCTGGACATCGTGCCCCTGAACGAGAACTCCTCCGAGT
ACCGCCTGATCAACTGCAACACCTCCGCCATCACCCAGGCCTGCCCCAAG
GTGTCCTTCGACCCCATCCCCATCCACTACTGCGCCCCCGCCGGCTACGC
CATCCTGAAGTGCAACAACAAGACCTTCAACGGCACCGGCCCCTGCAACA
ACGTGTCCACCGTGCAGTGCACCCACGGCATCAAGCCCGTGGTGTCCACC
CAGCTGCTGCTGAACGGCTCCCTGGCCGAGGAGGAGATCATCATCCGCTC
CGAGAACCTGACCGACAACGCCAAGACCATCATCGTGCAGCTGAACGAGT
CCGTGGAGATCGTGTGCACCCGCCCCAACAACAACACCCGCAAGTCCATG
CGCATCGGCCCCGGCCAGACCTTCTACGCCACCGGCGACATCATCGGCGA
CATCCGCCAGGCCCACTGCAACATCTCCGAGGACAAGTGGAACAAGACCC
TGCAGCAGGTGGCCGAGAAGCTGGGCAAGCACTTCCCCAACAAGACCATC
ACCTTCGAGCCCTCCTCCGGCGGCGACCTGGAGATCACCACCCACTCCTT
CAACTGCCGCGGCGAGTTCTTCTACTGCAACACCTCCAAGCTGTTCAACT
CCACCTACAACAACAACACCAACTCCAACTCCACCATCACCCTGCCCTGC
CGCATCAAGCAGATCATCAACATGTGGCAGGGCGTGGGCCAGGCCATGTA
CGCCCCCCCCATCGCCGGCAACATCACCTGCAAGTCCAACATCACCGGCC
TGCTGCTGACCCGCGACGGCGGCAAGGAGAACACCACCGAGACCTTCCGC
CCCGGCGGCGGCGACATGCGCGACAACTGGCGCTCCGAGCTGTACAAGTA
CAAGGTGGTGGAGATCAAGCCCCTGGGCGTGGCCCCCACCGAGGCCAAGC
GCCGCGTGGTGGAGCGCGAGAAGCGCGCCGTGGGCCTGGGCGCCGTGTTC
CTGGGCTTCCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCAC
CCTGACCGTGCAGGCCCGCCAGCTGCTGTCCGGCATCGTGCAGCAGCAGT
CCAACCTGCTGCGCGCCATCGAGGCCCAGCAGCACATGCTGCAGCTGACC
GTGTGGGGCATCAAGCAGCTGCAGGCCCGCGTGCTGGCCATGGAGCGCTA
CCTGAAGGACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGA
TCTGCACCACCGCCGTGCCCTGGAACTCCTCCTGGTCCAACAAGTCCCTG
GACGACATCTGGGACAACATGACCTGGATGGAGTGGGACCGCGAGATCTC
CAACTACACCGACACCATCTACCGCCTGCTGGAGGAGTCCCAGAACCAGC
AGGAGAAGAACGAGCAGGACCTGCTGGCCCTGGACTCCTGGGAGAACCTG
TGGAACTGGTTCGACATCACCAACTGGCTGTGGTACATCAAGATCTTCAT
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CCATCGTGAACCGCGTGCGCCAGGGCTACTCCCCCCTGTCCTTCCAGACC
CTGACCCCCAACCCCCGCGGCCCCGACCGCCTGGAGCGCATCGAGGAGGA
GGGCGGCGAGCAGGACCGCGACCGCTCCATCCGCCTGGTGTCCGGCTTCC
TGGCCCTGGCCTGGGACGACCTGCGCTCCCTGTGCCTGTTCTCCTACCAC
CGCCTGCGCGACTTCATCCTGATCGCCGCCCGCACCGTGGAGCTGCTGGG
CCGCTCCTCCCTGCGCGGCCTGCAGCGCGGCTGGGAGGCCCTGAAGTACC
TGGGCTCCCTGGTGCAGTACTGGGGCCAGGAGCTGAAGAAGTCCGCCATC
TCCCTGCTGGACACCATCGCCATCGCCGTGGCCGAGGGCACCGACCGCAT
CATCGAGGTGGTGCAGCGCGCCTGCCGCGCCATCCTGAACATCCCCCGCC
GCATCCGCCAGGGCTTCGAGGCCGCCCTGCTGTAA

Fig. 6B

C.con.env (subtype C consensus env. The amino acid sequence is different from Los Alamos Database August 2002)

GCCGCCATGCGCGTGATGGGCATCCTGCGCAACTGCCAGCAGTGGTGGAT
CTGGGGCATCCTGGGCTTCTGGATGCTGATGATCTGCAACGTGGTGGGCA
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ACCACCCTGTTCTGCGCCTCCGACGCCAAGGCCTACGAGAAGG AGGTGCA
CAACGTGTGGGCCACCCACGCCTGCGTGCCCACCGACCCCAACCCCCAGG
AGATGGTGCTGGAGAACGTGACCGAGAACTTCAACATGTGGAAGAACGAC
ATGGTGGACCAGATGCACGAGGACATCATCTCCCTGTGGGACCAGTCCCT
GAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAACTGCCGCA
ACGTGACCAACGCCACCAACAACACCTACAACGAGGAGATCAAG AACTGC
TCCTTCAACATCACCACCGAGCTGCGCGACAAGAAGAAGAAGGTGTACGC
CCTGTTCTACCGCCTGGACATCGTGCCCCTGAACGAGAACTCCTCCGAGT
ACCGCCTGATCAACTGCAACACCTCCGCCATCACCCAGGCCTGCCCCAAG
GTGTCCTTCGACCCCATCCCCATCCACTACTGCGCCCCCGCCGGCTACGC
CATCCTGAAGTGCAACAACAAGACCTTCAACGGCACCGGCCCCTG CAACA
ACGTGTCCACCGTGCAGTGCACCCACGGCATCAAGCCCGTGGTGTCCACC
CAGCTGCTGCTGAACGGCTCCCTGGCCGAGGAGGAGATCATCATCCGCTC
CGAGAACCTGACCAACAACGCCAAGACCATCATCGTGCACCTGAACGAGT
CCGTGGAGATCGTGTGCACCCGCCCCAACAACAACACCCGCAAGTCCATC
CGCATCGGCCCCGGCCAGACCTTCTACGCCACCGGCGACATCATCG GCGA
CATCCGCCAGGCCCACTGCAACATCTCCGAGGACAAGTGGAACAAGACCC
TGCAGCGCGTGTCCAAGAAGCTGAAGGAGCACTTCCCCAACAAGACCATC
AAGTTCGAGCCCTCCTCCGGCGGCGACCTGGAGATCACCACCCACTCCTT
CAACTGCCGCGGCGAGTTCTTCTACTGCAACACCTCCAAGCTGTTCAACT
CCACCTACAACAACAACACCAACTCCAACTCCACCATCACCCTGCCC TGC
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CGCCCCCCCCATCGCCGGCAACATCACCTGCAAGTCCAACATCACCGGCC
TGCTGCTGACCCGCGACGGCGGCAAGAAGAACACCACCGAGATCTTCCGC
CCCGGCGGCGGCGACATGCGCGACAACTGGCGCTCCGAGCTGTACAAGTA
CAAGGTGGTGGAGATCAAGCCCCTGGGCGTGGCCCCCACCAAGGCCAA GC
GCCGCGTGGTGGAGCGCGAGAAGCGCGCCGTGGGCATCGGCGCCGTGTTC
CTGGGCTTCCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCAC
CCTGACCGTGCAGGCCCGCCAGCTGCTGTCCGGCATCGTGCAGCAGCAGT
CCAACCTGCTGCGCGCCATCGAGGCCCAGCAGCACATGCTGCAGCTGACC
GTGTGGGGCATCAAGCAGCTGCAGACCCGCGTGCTGGCCATCGAGCGCTA
CCTGAAGGACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGA
TCTGCACCACCGCCGTGCCCTGGAACTCCTCCTGGTCCAACAAGTCCCAG
GAGGACATCTGGGACAACATGACCTGGATGCAGTGGGACCGCGAGATCTC
CAACTACACCGACACCATCTACCGCCTGCTGGAGGACTCCCAGAACCAGC
AGGAGAAGAACGAGAAGGACCTGCTGGCCCTGGACTCCTGGAAGAACCTG
TGGAACTGGTTCGACATCACCAACTGGCTGTGGTACATCAAGATCTTCAT
CATGATCGTGGGCGGCCTGATCGGCCTGCGCATCATCTTCGCCGTGCTGT
CCATCGTGAACCGCGTGCGCCAGGGCTACTCCCCCCTGTCCTTCCAGACC
CTGACCCCCAACCCCCGCGGCCCCGACCGCCTGGGCCGCATCGAGGAGGA
GGGCGGCGAGCAGGACCGCGACCGCTCCATCCGCCTGGTGTCCGGCTTCC
TGGCCCTGGCCTGGGACGACCTGCGCTCCCTGTGCCTGTTCTCCTACCAC
CGCCTGCGCGACTTCATCCTGGTGGCCGCCCGCGCCGTGGAGCTGCTGGG
CCGCTCCTCCCTGCGCGGCCTGCAGCGCGGCTGGGAGGCCCTGAAGTACC
TGGGCTCCCTGGTGCAGTACTGGGGCCTGGAGCTGAAGAAGTCCGCCATC
TCCCTGCTGGACACCATCGCCATCGCCGTGGCCGAGGGCACCGACCGCAT
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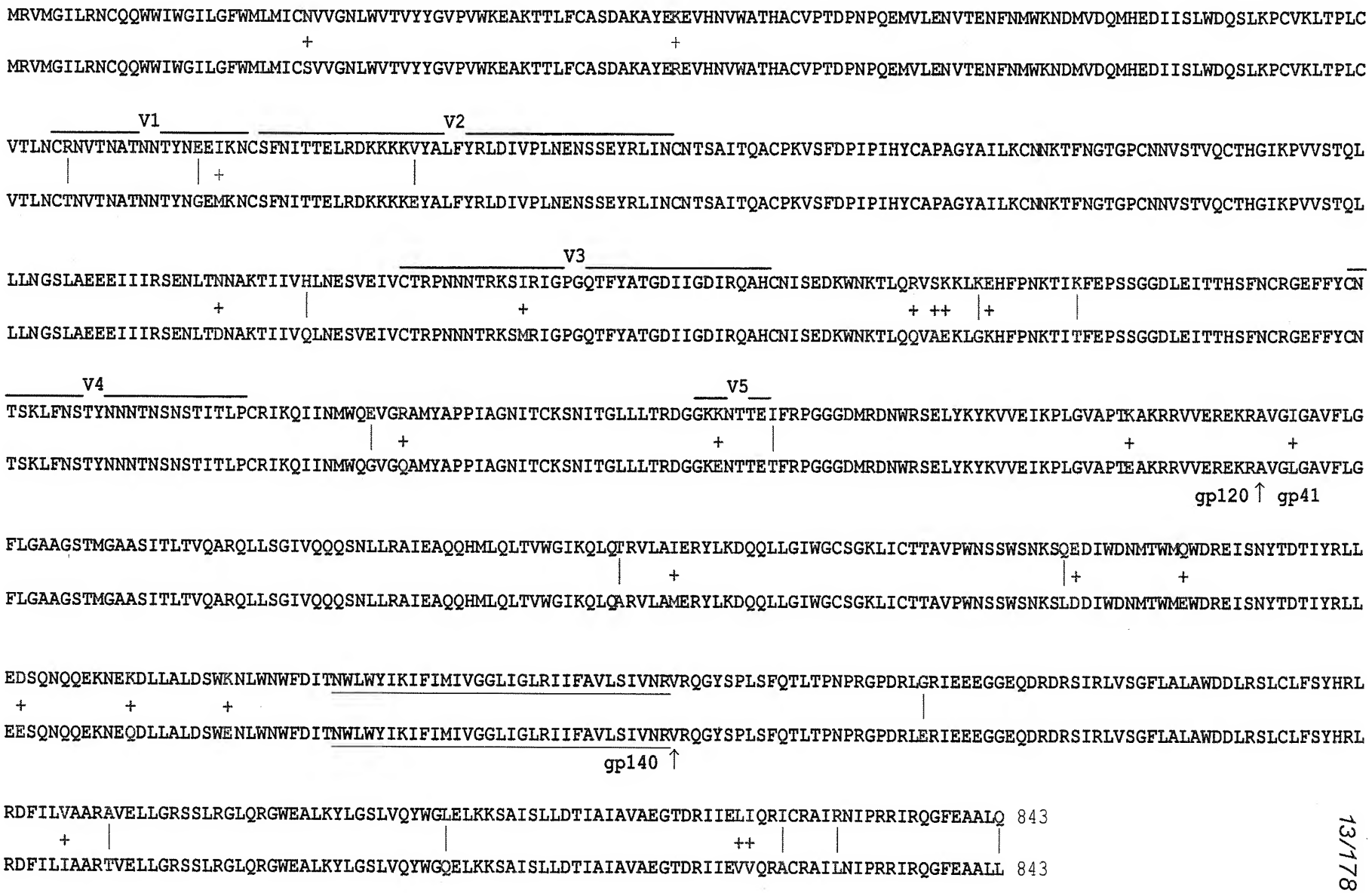
GCATCCGCCAGGGCTTCGAGGCCGCCCTGCAGTAA

Fig. 8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V1
V2
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VTLNCTNVTNATNNTYNGEMKNCSFNITTELRDKKKKEYALFYRLDIVPLNENSSEYRLINCNTSAITQACPKVSFDPIPIHYCAPAGYAILKCNNKTFNGTGPCNNVSTVQCTHGIKPVVSTQL
V3
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LLNGSLAEEEIIIRSENLTDNAKTIIVQLNESVEIVCTRPNNNTRKSMRIGPGQTFYATGDIIGDIRQAHCNISEDKWNKTLQQVAEKLGKHFPNKTITFEPSSGGDLEITTHSFNCRGEFFYCN
V4
V5
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TSKLFNSTYNNNTNSNSTITLPCRIKQIINMWQGVGQAMYAPPIAGNITCKSNITGLLLTRDGGKENTTETFRPGGGDMRDNWRSELYKYKVVEIKPLGVAPTEAKRRVVEREKRAVGLGAVFLG
gp120 ↑ gp41
FLGAAGSTMGAASITLTVQARQLLSGIVQQQSNLLRAIEAQQHMLQLTVWGIKQLQTRVLAIERYLKDQQLLGIWGCSGKLICTTAVPWNSSWSNKSQEDIWDNMTWMQWDREISNYTDTIYRLL
FLGAAGSTMGAASITLTVQARQLLSGIVQQQSNLLRAIEAQQHMLQLTVWGIKQLQARVLAMERYLKDQQLLGIWGCSGKLICTTAVPWNSSWSNKSLDDIWDNMTWMEWDREISNYTDTIYRLL
EDSQNQQEKNEKDLLALDSWKNLWNWFDITNWLWYIKIFIMIVGGLIGLRIIFAVLSIVNRVRQGYSPLSFQTLTPNPRGPDRLGRIEEEGGEQDRDRSIRLVSGFLALAWDDLRSLCLFSYHRL
EESQNQQEKNEQDLLALDSWENLWNWFDITNWLWYIKIFIMIVGGLIGLRIIFAVLSIVNRVRQGYSPLSFQTLTPNPRGPDRLERIEEEGGEQDRDRSIRLVSGFLALAWDDLRSLCLFSYHRL
gp140 ↑
RDFILVAARAVELLGRSSLRGLQRGWEALKYLGSLVQYWGLELKKSAISLLDTIAIAVAEGTDRIIELIQRICRAIRNIPRRIRQGFEAALQ 843
RDFILIAARTVELLGRSSLRGLQRGWEALKYLGSLVQYWGQELKKSAISLLDTIAIAVAEGTDRIIEVVQRACRAILNIPRRIRQGFEAALL 843

Fig. 14B

CONs.env (gorup M consensus env gene. This one contain the consensus sequence for variable regions in env gene. The identical amino acid sequences as in the public domain)

GCCGCCGCCATGCGCGTGCGCGGCATCCAGCGCAACTGCCAGCACCTGTG
GCGCTGGGGCACCCTGATCCTGGGCATGCTGATGATCTGCTCCGCCGCCG
AGAACCTGTGGGTGACCGTGTACTACGGCGTGCCCGTGTGGAAGGAGGCC
AACACCACCCTGTTCTGCGCCTCCGACGCCAAGGCCTACGACACCGAGGT
GCACAACGTGTGGGCCACCCACGCCTGCGTGCCCACCGACCCCAACCCCC
AGGAGATCGTGCTGGAGAACGTGACCGAGAACTTCAACATGTGGAAGAAC
AACATGGTGGAGCAGATGCACGAGGACATCATCTCCCTGTGGGACCAGTC
CCTGAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAACTGCA
CCAACGTGAACGTGACCAACACCACCAACAACACCGAGGAGAAGGGCGAG
ATCAAGAACTGCTCCTTCAACATCACCACCGAGATCCGCGACAAGAAGCA
GAAGGTGTACGCCCTGTTCTACCGCCTGGACGTGGTGCCCATCGACGACA
ACAACAACAACTCCTCCAACTACCGCCTGATCAACTGCAACACCTCCGCC
ATCACCCAGGCCTGCCCCAAGGTGTCCTTCGAGCCCATCCCCATCCACTA
CTGCGCCCCCGCCGGCTTCGCCATCCTGAAGTGCAACGACAAGAAGTTCA
ACGGCACCGGCCCCTGCAAGAACGTGTCCACCGTGCAGTGCACCCACGGC
ATCAAGCCCGTGGTGTCCACCCAGCTGCTGCTGAACGGCTCCCTGGCCGA
GGAGGAGATCATCATCCGCTCCGAGAACATCACCAACAACGCCAAGACCA
TCATCGTGCAGCTGAACGAGTCCGTGGAGATCAACTGCACCCGCCCCAAC
AACAACACCCGCAAGTCCATCCGCATCGGCCCCGGCCAGGCCTTCTACGC
CACCGGCGACATCATCGGCGACATCCGCCAGGCCCACTGCAACATCTCCG
GCACCAAGTGGAACAAGACCCTGCAGCAGGTGGCCAAGAAGCTGCGCGAG
CACTTCAACAACAAGACCATCATCTTCAAGCCCTCCTCCGGCGGCGACCT
GGAGATCACCACCCACTCCTTCAACTGCCGCGGCGAGTTCTTCTACTGCA
ACACCTCCGGCCTGTTCAACTCCACCTGGATCGGCAACGGCACCAAGAAC
AACAACAACACCAACGACACCATCACCCTGCCCTGCCGCATCAAGCAGAT
CATCAACATGTGGCAGGGCGTGGGCCAGGCCATGTACGCCCCCCCCATCG
AGGGCAAGATCACCTGCAAGTCCAACATCACCGGCCTGCTGCTGACCCGC
GACGGCGGCAACAACAACACCAACGAGACCGAGATCTTCCGCCCCGGCGG
CGGCGACATGCGCGACAACTGGCGCTCCGAGCTGTACAAGTACAAGGTGG
TGAAGATCGAGCCCCTGGGCGTGGCCCCCACCAAGGCCAAGCGCCGCGTG
GTGGAGCGCGAGAAGCGCGCCGTGGGCATCGGCGCCGTGTTCCTGGGCTT
CCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCACCCTGACCG
TGCAGGCCCGCCAGCTGCTGTCCGGCATCGTGCAGCAGCAGTCCAACCTG
CTGCGCGCCATCGAGGCCCAGCAGCACCTGCTGCAGCTGACCGTGTGGGG
CATCAAGCAGCTGCAGGCCCGCGTGCTGGCCGTGGAGCGCTACCTGAAGG
ACCAGCAGCTGCTGGGCATCTGGGGCTGCTCCGGCAAGCTGATCTGCACC
ACCACCGTGCCCTGGAACTCCTCCTGGTCCAACAAGTCCCAGGACGAGAT
CTGGGACAACATGACCTGGATGGAGTGGGAGCGCGAGATCAACAACTACA
CCGACATCATCTACTCCCTGATCGAGGAGTCCCAGAACCAGCAGGAGAAG
AACGAGCAGGAGCTGCTGGCCCTGGACAAGTGGGCCTCCCTGTGGAACTG
GTTCGACATCACCAACTGGCTGTGGTACATCAAGATCTTCATCATGATCG
TGGGCGGCCTGATCGGCCTGCGCATCGTGTTCGCCGTGCTGTCCATCGTG
AACCGCGTGCGCCAGGGCTACTCCCCCCTGTCCTTCCAGACCCTGATCCC
CAACCCCCGCGGCCCCGACCGCCCCGAGGGCATCGAGGAGGAGGGCGGCG
AGCAGGACCGCGACCGCTCCATCCGCCTGGTGAACGGCTTCCTGGCCCTG
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CGACTTCATCCTGATCGCCGCCCGCACCGTGGAGCTGCTGGGCCGCAAGG
GCCTGCGCCGCGGCTGGGAGGCCCTGAAGTACCTGTGGAACCTGCTGCAG
TACTGGGGCCAGGAGCTGAAGAACTCCGCCATCTCCCTGCTGGACACCAC
CGCCATCGCCGTGGCCGAGGGCACCGACCGCGTGATCGAGGTGGTGCAGC
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Fig. 15A

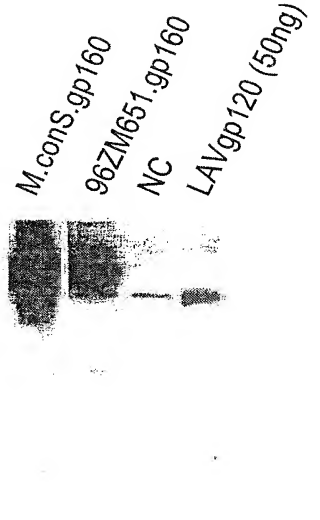
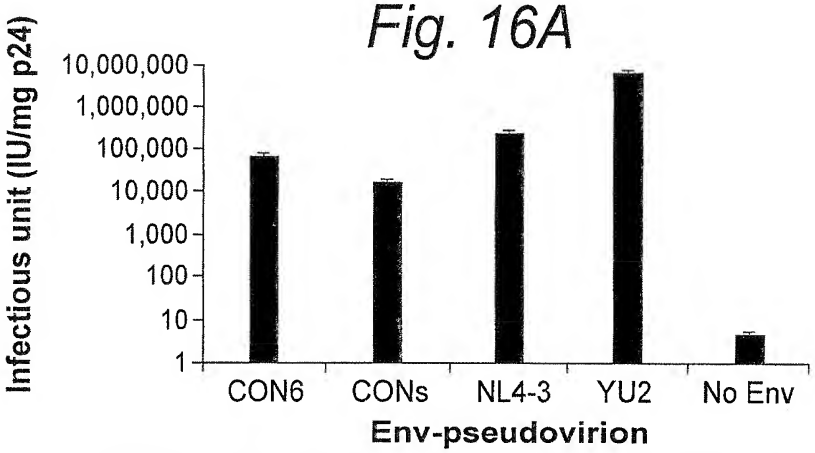


Fig. 15B

Cell lysate **Supernatant**

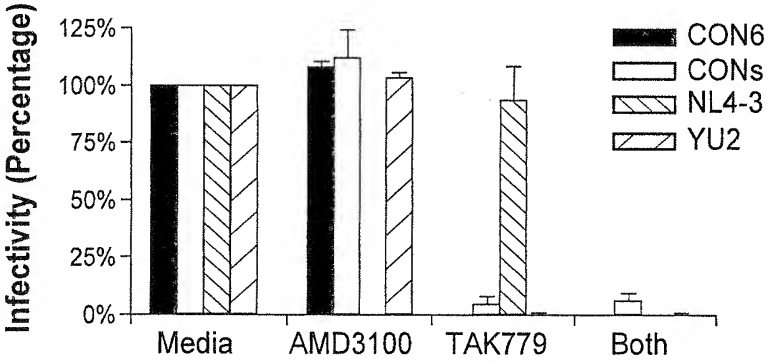
Expression of A.con env gene in mammalian cells

Fig. 16A



Infectivity and coreceptor usage of CON6 and CONs *env* genes

Fig. 16B



Infectivity and coreceptor usage of CON6 and CONs *env* genes

Fig. 18B

A.con.env (subtype A consensus env. Identical amino acid sequence to that in the public domain)

GCCGCCGCCATGCGCGTGATGGGCATCCAGCGCAACTGCCAGCACCTGTG
GCGCTGGGGCACCATGATCCTGGGCATGATCATCATCTGCTCCGCCGCCG
AGAACCTGTGGGTGACCGTGTACTACGGCGTGCCCGTGTGGAAGGACGCC
GAGACCACCCTGTTCTGCGCCTCCGACGCCAAGGCCTACGACACCGAGGT
GCACAACGTGTGGGCCACCCACGCCTGCGTGCCCACCGACCCCAACCCCC
AGGAGATCAACCTGGAGAACGTGACCGAGGAGTTCAACATGTGGAAGAAC
AACATGGTGGAGCAGATGCACACCGACATCATCTCCCTGTGGGACCAGTC
CCTGAAGCCCTGCGTGAAGCTGACCCCCCTGTGCGTGACCCTGAACTGCT
CCAACGTGAACGTGACCACCAACATCACCAACATCACCGACAACATGAAG
GGCGAGATCAAGAACTGCTCCTTCAACATGACCACCGAGCTGCGCGACAA
GAAGCAGAAGGTGTACTCCCTGTTCTACAAGCTGGACGTGGTGCAGATCA
ACAAGTCCAACTCCTCCTCCCAGTACCGCCTGATCAACTGCAACACCTCC
GCCATCACCCAGGCCTGCCCCAAGGTGTCCTTCGAGCCCATCCCCATCCA
CTACTGCGCCCCCGCCGGCTTCGCCATCCTGAAGTGCAAGGACAAGGAGT
TCAACGGCACCGGCCCCTGCAAGAACGTGTCCACCGTGCAGTGCACCCAC
GGCATCAAGCCCGTGGTGTCCACCCAGCTGCTGCTGAACGGCTCCCTGGC
CGAGGAGGAGGTGATGATCCGCTCCGAGAACATCACCAACAACGCCAAGA
ACATCATCGTGCAGCTGACCAAGCCCGTGAAGATCAACTGCACCCGCCCC
AACAACAACACCCGCAAGTCCATCCGCATCGGCCCCGGCCAGGCCTTCTA
CGCCACCGGCGACATCATCGGCGACATCCGCCAGGCCCACTGCAACGTGT
CCCGCACCGAGTGGAACGAGACCCTGCAGAAGGTGGCCAAGCAGCTGCGC
AAGTACTTCAACAACAAGACCATCATCTTCACCAACTCCTCCGGCGGCGA
CCTGGAGATCACCACCCACTCCTTCAACTGCGGCGGCGAGTTCTTCTACT
GCAACACCTCCGGCCTGTTCAACTCCACCTGGAACGGCAACGGCACCAAG
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CAAGCAGATCATCAACATGTGGCAGCGCGTGGGCCAGGCCATGTACGCCC
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CTGACCCGCGACGGCGGCGACAACAACTCCAAGAACGAGACCTTCCGCCC
CGGCGGCGGCGACATGCGCGACAACTGGCGCTCCGAGCTGTACAAGTACA
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GGGCTTCCTGGGCGCCGCCGGCTCCACCATGGGCGCCGCCTCCATCACCC
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AACCTGCTGCGCGCCATCGAGGCCCAGCAGCACCTGCTGAAGCTGACCGT
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GAACTGGTTCGACATCTCCAACTGGCTGTGGTACATCAAGATCTTCATCA
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CCTGCGCGACTTCATCCTGATCGCCGCCCGCACCGTGGAGCTGCTGGGCC
ACTCCTCCCTGAAGGGCCTGCGCCTGGGCTGGGAGGGCCTGAAGTACCTG
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CCTGCTGGACACCATCGCCATCGCCGTGGCCGGCTGGACCGACCGCGTGA
TCGAGATCGGCCAGCGCATCTGCCGCGCCATCCTGAACATCCCCCGCCGC
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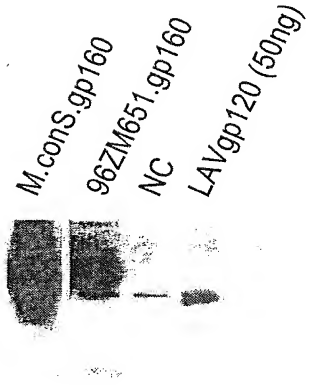
Fig. 18C



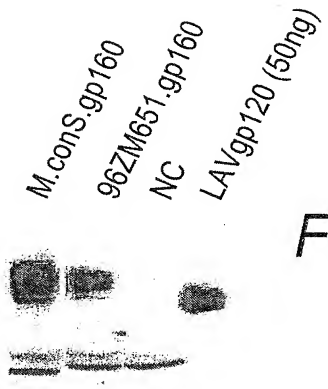


Fig. 18D

Cell lysate **Supernatant**

Expression of A.con env gene in mammalian cells

Fig. 19A

M.con.gag (group M consensus gag. Identical amino acid sequence to that in the public domain)

GCCGCCGCCATGGGCGCCCGCGCCTCCGTGCTGTCCGGCGGCAAGCTGGA
CGCCTGGGAGAAGATCCGCCTGCGCCCCGGCGGCAAGAAGAAGTACCGCC
TGAAGCACCTGGTGTGGGCCTCCCGCGAGCTGGAGCGCTTCGCCCTGAAC
CCCGGCCTGCTGGAGACCTCCGAGGGCTGCAAGCAGATCATCGGCCAGCT
GCAGCCCGCCCTGCAGACCGGCTCCGAGGAGCTGCGCTCCCTGTACAACA
CCGTGGCCACCCTGTACTGCGTGCACCAGCGCATCGAGGTGAAGGACACC
AAGGAGGCCCTGGAGAAGATCGAGGAGGAGCAGAACAAGTCCCAGCAGAA
GACCCAGCAGGCCGCCGCCGACAAGGGCAACTCCTCCAAGGTGTCCCAGA
ACTACCCCATCGTGCAGAACCTGCAGGGCCAGATGGTGCACCAGGCCATC
TCCCCCCGCACCCTGAACGCCTGGGTGAAGGTGATCGAGGAGAAGGCCTT
CTCCCCCGAGGTGATCCCCATGTTCTCCGCCCTGTCCGAGGGCGCCACCC
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ATGCAGATGCTGAAGGACACCATCAACGAGGAGGCCGCCGAGTGGGACCG
CCTGCACCCCGTGCACGCCGGCCCCATCCCCCCCGGCCAGATGCGCGAGC
CCCGCGGCTCCGACATCGCCGGCACCACCTCCACCCTGCAGGAGCAGATC
GCCTGGATGACCTCCAACCCCCCCATCCCCGTGGGCGAGATCTACAAGCG
CTGGATCATCCTGGGCCTGAACAAGATCGTGCGCATGTACTCCCCCGTGT
CCATCCTGGACATCCGCCAGGGCCCCAAGGAGCCCTTCCGCGACTACGTG
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CGAGGCCATGTCCCAGGTGACCAACGCCGCCATCATGATGCAGCGCGGCA
ACTTCAAGGGCCAGCGCCGCATCATCAAGTGCTTCAACTGCGGCAAGGAG
GGCCACATCGCCCGCAACTGCCGCGCCCCCCGCAAGAAGGGCTGCTGGAA
GTGCGGCAAGGAGGGCCACCAGATGAAGGACTGCACCGAGCGCCAGGCCA
ACTTCCTGGGCAAGATCTGGCCCTCCAACAAGGGCCGCCCCGGCAACTTC
CTGCAGTCCCGCCCCGAGCCCACCGCCCCCCCCGCCGAGTCCTTCGGCTT
CGGCGAGGAGATCACCCCCTCCCCCAAGCAGGAGCCCAAGGACAAGGAGC
CCCCCCTGACCTCCCTGAAGTCCCTGTTCGGCAACGACCCCCTGTCCCAG
TAA

M.con.pol.nuc

Fig. 19B

GCCGCCGCCATGCCCCAGATCACCCTGTGGCAGCGCCCCCTGGTGACCAT
CAAGATCGGCGGCCAGCTGAAGGAGGCCCTGCTGGCCACCGGCGCCGACG
ACACCGTGCTGGAGGAGATCAACCTGCCCGGCAAGTGGAAGCCCAAGATG
ATCGGCGGCATCGGCGGCTTCATCAAGGTGCGCCAGTACGACCAGATCCT
GATCGAGATCTGCGGCAAGAAGGCCATCGGCACCGTGCTGGTGGGCCCCA
CCCCCGTGAACATCATCGGCCGCAACATGCTGACCCAGATCGGCTGCACC
CTGAACTTCCCCATCTCCCCCATCGAGACCGTGCCCGTGAAGCTGAAGCC
CGGCATGGACGGCCCCAAGGTGAAGCAGTGGCCCCTGACCGAGGAGAAGA
TCAAGGCCCTGACCGAGATCTGCACCGAGATGGAGAAGGAGGGCAAGATC
TCCAAGATCGGCCCCGAGAACCCCTACAACACCCCCATCTTCGCCATCAA
GAAGAAGGACTCCACCAAGTGGCGCAAGCTGGTGGACTTCCGCGAGCTGA
ACAAGCGCACCCAGGACTTCTGGGAGGTGCAGCTGGGCATCCCCCACCCC
GCCGGCCTGAAGAAGAAGAAGTCCGTGACCGTGCTGGACGTGGGCGACGC
CTACTTCTCCGTGCCCCTGGACGAGGACTTCCGCAAGTACACCGCCTTCA
CCATCCCCTCCATCAACAACGAGACCCCCGGCATCCGCTACCAGTACAAC
GTGCTGCCCCAGGGCTGGAAGGGCTCCCCCGCCATCTTCCAGTCCTCCAT
GACCAAGATCCTGGAGCCCTTCCGCACCCAGAACCCCGAGATCGTGATCT
ACCAGTACATGGACGACCTGTACGTGGGCTCCGACCTGGAGATCGGCCAG
CACCGCGCCAAGATCGAGGAGCTGCGCGAGCACCTGCTGCGCTGGGGCTT
CACCACCCCCGACAAGAAGCACCAGAAGGAGCCCCCCTTCCTGTGGATGG
GCTACGAGCTGCACCCCGACAAGTGGACCGTGCAGCCCATCCAGCTGCCC
GAGAAGGACTCCTGGACCGTGAACGACATCCAGAAGCTGGTGGGCAAGCT
GAACTGGGCCTCCCAGATCTACCCCGGCATCAAGGTGAAGCAGCTGTGCA
AGCTGCTGCGCGGCGCCAAGGCCCTGACCGACATCGTGCCCCTGACCGAG
GAGGCCGAGCTGGAGCTGGCCGAGAACCGCGAGATCCTGAAGGAGCCCGT
GCACGGCGTGTACTACGACCCCTCCAAGGACCTGATCGCCGAGATCCAGA
AGCAGGGCCAGGACCAGTGGACCTACCAGATCTACCAGGAGCCCTTCAAG
AACCTCAAGACCGGCAAGTACGCCAAGATGCGCTCCGCCCACACCAACGA
CGTGAAGCAGCTGACCGAGGCCGTGCAGAAGATCGCCACCGAGTCCATCG
TGATCTGGGGCAAGACCCCCAAGTTCCGCCTGCCCATCCAGAAGGAGACC

TGGGAGACCTGGTGGACCGAGTACTGGCAGGCCACCTGGATTCCCGAGTG
GGAGTTCGTGAACACCCCCCCCCTGGTGAAGCTGTGGTACCAGCTGGAGA
AGGAGCCCATCGCCGGCGCCGAGACCTTCTACGTGGACGGCGCCGCCAAC
CGCGAGACCAAGCTGGGCAAGGCCGGCTACGTGACCGACCGCGGCCGCCA
GAAGGTGGTGTCCCTGACCGAGACCACCAACCAGAAAACCGAGCTGCAGG
CCATCCACCTGGCCCTGCAGGACTCCGGCTCCGAGGTGAACATCGTGACC
GACTCCCAGTACGCCCTGGGCATCATCCAGGCCCAGCCCGACAAGTCCGA
GTCCGAGCTGGTGAACCAGATCATCGAGCAGCTGATCAAGAAGGAGAAGG
TGTACCTGTCCTGGGTGCCCGCCCACAAGGGCATCGGCGGCAACGAGCAG
GTGGACAAGCTGGTGTCCACCGGCATCCGCAAGGTGCTGTTCCTGGACGG
CATCGACAAGGCCCAGGAGGAGCACGAGAAGTACCACTCCAACTGGCGCG
CCATGGCCTCCGACTTCAACCTGCCCCCCATCGTGGCCAAGGAGATCGTG
GCCTCCTGCGACAAGTGCCAGCTGAAGGGCGAGGCCATGCACGGCCAGGT
GGACTGCTCCCCCGGCATCTGGCAGCTGGACTGCACCCACCTGGAGGGCA
AGATCATCCTGGTGGCCGTGCACGTGGCCTCCGGCTACATCGAGGCCGAG
GTGATCCCCGCCGAGACCGGCCAGGAGACCGCCTACTTCATCCTGAAGCT
GGCCGGCCGCTGGCCCGTGAAGGTGATCCACACCGACAACGGCTCCAACT
TCACCTCCGCCGCCGTGAAGGCCGCCTGCTGGTGGGCCGGCATCCAGCAG
GAGTTCGGCATCCCCTACAACCCCCAGTCCCAGGGCGTGGTGGAGTCCAT
GAACAAGGAGCTGAAGAAGATCATCGGCCAGGTGCGCGACCAGGCCGAGC
ACCTCAAGACCGCCGTGCAGATGGCCGTGTTCATCCACAACTTCAAGCGC
AAGGGCGGCATCGGCGGCTACTCCGCCGGCGAGCGCATCATCGACATCAT
CGCCACCGACATCCAGACCAAGGAGCTGCAGAAGCAGATCACCAAGATCC
AGAACTTCCGCGTGTACTACCGCGACTCCCGCGACCCCATCTGGAAGGGC
CCCGCCAAGCTGCTGTGGAAGGGCGAGGGCGCCGTGGTGATCCAGGACAA
CTCCGACATCAAGGTGGTGCCCCGCCGCAAGGCCAAGATCATCCGCGACT
ACGGCAAGCAGATGGCCGGCGACGACTGCGTGGCCGGCCGCCAGGACGAG
GACTAA

Fig. 19C

M.con.nef (group M consensus nef. Identical amino acid sequence to that in the public domain)

GCCGCCGCCATGGGCGGCAAGTGGTCCAAGTCCTCCATCGTGGGCTGGCC
CGCCGTGCGCGAGCGCATCCGCCGCACCCACCCCGCCGCCGAGGGCGTGG
GCGCCGTGTCCCAGGACCTGGACAAGCACGGCGCCATCACCTCCTCCAAC
ACCGCCGCCAACAACCCCGACTGCGCCTGGCTGGAGGCCCAGGAGGAGGA
GGAGGAGGTGGGCTTCCCCGTGCGCCCCCAGGTGCCCCTGCGCCCCATGA
CCTACAAGGCCGCCCTGGACCTGTCCCACTTCCTGAAGGAGAAGGGCGGC
CTGGAGGGCCTGATCTACTCCAAGAAGCGCCAGGAGATCCTGGACCTGTG
GGTGTACCACACCCAGGGCTACTTCCCCGACTGGCAGAACTACACCCCCG
GCCCCGGCATCCGCTACCCCCTGACCTTCGGCTGGTGCTTCAAGCTGGTG
CCCGTGGACCCCGAGGAGGTGGAGGAGGCCAACGAGGGCGAGAACAACTC
CCTGCTGCACCCCATGTGCCAGCACGGCATGGAGGACGAGGAGCGCGAGG
TGCTGATGTGGAAGTTCGACTCCCGCCTGGCCCTGCGCCACATCGCCCGC
GAGCTGCACCCCGAGTACTACAAGGACTGCTAA

Fig. 19D

C.con.pol.nuc

GCCGCCGCCATGCCCCAGATCACCCTGTGGCAGCGCCCCCTGGTGTCCAT
CAAGGTGGGCGGCCAGATCAAGGAGGCCCTGCTGGCCACCGGCGCCGACG
ACACCGTGCTGGAGGAGATCAACCTGCCCGGCAAGTGGAAGCCCAAGATG
ATCGGCGGCATCGGCGGCTTCATCAAGGTGCGCCAGTACGACCAGATCCT
GATCGAGATCTGCGGCAAGAAGGCCATCGGCACCGTGCTGGTGGGCCCCA
CCCCCGTGAACATCATCGGCCGCAACATGCTGACCCAGCTGGGCTGCACC
CTGAACTTCCCCATCTCCCCCATCGAGACCGTGCCCGTGAAGCTGAAGCC
CGGCATGGACGGCCCCAAGGTGAAGCAGTGGCCCCTGACCGAGGAGAAGA
TCAAGGCCCTGACCGCCATCTGCGAGGAGATGGAGAAGGAGGGCAAGATC
ACCAAGATCGGCCCCGAGAACCCCTACAACACCCCCGTGTTCGCCATCAA
GAAGAAGGACTCCACCAAGTGGCGCAAGCTGGTGGACTTCCGCGAGCTGA
ACAAGCGCACCCAGGACTTCTGGGAGGTGCAGCTGGGCATCCCCCACCCC
GCCGGCCTGAAGAAGAAGAAGTCCGTGACCGTGCTGGACGTGGGCGACGC
CTACTTCTCCGTGCCCCTGGACGAGGGCTTCCGCAAGTACACCGCCTTCA
CCATCCCCTCCATCAACAACGAGACCCCCGGCATCCGCTACCAGTACAAC
GTGCTGCCCCAGGGCTGGAAGGGCTCCCCCGCCATCTTCCAGTCCTCCAT
GACCAAGATCCTGGAGCCCTTCCGCGCCCAGAACCCCGAGATCGTGATCT
ACCAGTACATGGACGACCTGTACGTGGGCTCCGACCTGGAGATCGGCCAG
CACCGCGCCAAGATCGAGGAGCTGCGCGAGCACCTGCTGAAGTGGGGCTT
CACCACCCCCGACAAGAAGCACCAGAAGGAGCCCCCCTTCCTGTGGATGG
GCTACGAGCTGCACCCCGACAAGTGGACCGTGCAGCCCATCCAGCTGCCC
GAGAAGGACTCCTGGACCGTGAACGACATCCAGAAGCTGGTGGGCAAGCT
GAACTGGGCCTCCCAGATCTACCCCGGCATCAAGGTGCGCCAGCTGTGCA
AGCTGCTGCGCGGCGCCAAGGCCCTGACCGACATCGTGCCCCTGACCGAG
GAGGCCGAGCTGGAGCTGGCCGAGAACCGCGAGATCCTGAAGGAGCCCGT
GCACGGCGTGTACTACGACCCCTCCAAGGACCTGATCGCCGAGATCCAGA
AGCAGGGCCACGACCAGTGGACCTACCAGATCTACCAGGAGCCCTTCAAG
AACCTCAAGACCGGCAAGTACGCCAAGATGCGCACCGCCCACACCAACGA
CGTGAAGCAGCTGACCGAGGCCGTGCAGAAGATCGCCATGGAGTCCATCG
TGATCTGGGGCAAGACCCCCAAGTTCCGCCTGCCCATCCAGAAGGAGACC
TGGGAGACCTGGTGGACCGACTACTGGCAGGCCACCTGGATTCCCGAGTG
GGAGTTCGTGAACACCCCCCCCCTGGTGAAGCTGTGGTACCAGCTGGAGA
AGGAGCCCATCGCCGGCGCCGAGACCTTCTACGTGGACGGCGCCGCCAAC

Fig. 19D (continued)

CGCGAGACCAAGATCGGCAAGGCCGGCTACGTGACCGACCGCGGCCGCCA
GAAGATCGTGTCCCTGACCGAGACCACCAACCAGAAAACCGAGCTGCAGG
CCATCCAGCTGGCCCTGCAGGACTCCGGCTCCGAGGTGAACATCGTGACC
GACTCCCAGTACGCCCTGGGCATCATCCAGGCCCAGCCCGACAAGTCCGA
GTCCGAGCTGGTGAACCAGATCATCGAGCAGCTGATCAAGAAGGAGCGCG
TGTACCTGTCCTGGGTGCCCGCCCACAAGGGCATCGGCGGCAACGAGCAG
GTGGACAAGCTGGTGTCCTCCGGCATCCGCAAGGTGCTGTTCCTGGACGG
CATCGACAAGGCCCAGGAGGAGCACGAGAAGTACCACTCCAACTGGCGCG
CCATGGCCTCCGAGTTCAACCTGCCCCCCATCGTGGCCAAGGAGATCGTG
GCCTCCTGCGACAAGTGCCAGCTGAAGGGCGAGGCCATGCACGGCCAGGT
GGACTGCTCCCCCGGCATCTGGCAGCTGGACTGCACCCACCTGGAGGGCA
AGATCATCCTGGTGGCCGTGCACGTGGCCTCCGGCTACATCGAGGCCGAG
GTGATCCCCGCCGAGACCGGCCAGGAGACCGCCTACTTCATCCTGAAGCT
GGCCGGCCGCTGGCCCGTGAAGGTGATCCACACCGACAACGGCTCCAACT
TCACCTCCGCCGCCGTGAAGGCCGCCTGCTGGTGGGCCGGCATCCAGCAG
GAGTTCGGCATCCCCTACAACCCCCAGTCCCAGGGCGTGGTGGAGTCCAT
GAACAAGGAGCTGAAGAAGATCATCGGCCAGGTGCGCGACCAGGCCGAGC
ACCTCAAGACCGCCGTGCAGATGGCCGTGTTCATCCACAACTTCAAGCGC
AAGGGCGGCATCGGCGGCTACTCCGCCGGCGAGCGCATCATCGACATCAT
CGCCACCGACATCCAGACCAAGGAGCTGCAGAAGCAGATCATCAAGATCC
AGAACTTCCGCGTGTACTACCGCGACTCCCGCGACCCCATCTGGAAGGGC
CCCGCCAAGCTGCTGTGGAAGGGCGAGGGCGCCGTGGTGATCCAGGACAA
CTCCGACATCAAGGTGGTGCCCCGCCGCAAGGCCAAGATCATCAAGGACT
ACGGCAAGCAGATGGCCGGCGCCGACTGCGTGGCCGGCCGCCAGGACGAG
GACTAA

Fig. 19E

M.con.gag (group M consensus gag)

MGARASVLSGGKLDAWEKIRLRPGGKKKYRLKHLVWASRELERFALNPGLLETSEG CKQIIGQLQPA
LQTGSEELRSLYNTVATLYCVHQRIEVKDTKEALEKIEEEQNKSQQKTQQAAADKGNSSKVSQNYPIVQN
LQGQMVHQAISPRTLNAWVKVIEEKAFSPEVIPMFSALSEGATPQDLNTMLNTVGGHQAAMQMLKDTINE
EAAEWDRLHPVHAGPIPPGQMREPRGSDIAGTTSTLQEQIAWMTSNPPIPVGEIYKRWIILGLNKIVRMY
SPVSILDIRQGPKEPFRDYVDRFFKTLRAEQATQDVKNWMTDTLLVQNANPDCKTILKALGPGATLEEMM
TACQGVGGPGHKARVLAEAMSQVTNAAIMMQRGNFKGQRRIIKCFNCGKEGHIARNCRAPRKKGCWKCGK
EGHQMKDCTERQANFLGKIWPSNKGRPGNFLQSRPEPTAPPAESFGFGEEITPSPKQEPKDKEPPLTSLK
SLFGNDPLSQ